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A Study of the Etiology of Perineal Laceration, with a New Method for its Proper Repair.

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A STUDY OF THE ETIOLOGY OF PERINEAL LACERATION, WITH A NEW METHOD FOR ITS PROPER REPAIR.

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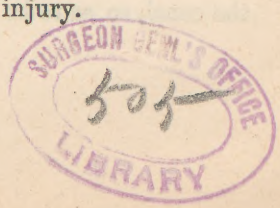
New York.

THE lesion of laceration of the perineum, and all known as pertaining to the injury, has occupied the attention of most of us; and with many to so great an extent that I feel it incumbent to apologize on presenting a subject for your consideration which has apparently become so threadbare from frequent discussion. I do not exaggerate in the statement that during the past twenty years I have given more thought to this subject than to any other one likely to be brought before us. I have long since succeeded, by some surgical procedure, in relieving the train of symptoms which we attribute to laceration of the perineum, and due, as supposed, to a want of support. But this success only convinced me that the injury which we have recognized as the factor could exert of itself but little, if any, influence in producing the consequences attributed to it. My belief is that a simple laceration of the perineum, extending even to the fibers of the sphincter ani, produces no inconvenience after the parts have once healed, and only occasionally do we find disturbances of a reflex character due to the presence of cicatricial tissue. I have long felt that there existed some other lesion causing the difficulty which we had not recognized, and that we were equally ignorant as to the cause and mode of production. No one, I think, will deny the fact that the suffering generally attributed to a loss of the perineum is by no means in proportion to the apparent extent of injury.



We can all recall instances illustrating the condition where the perineum, even in the case of laboring women, had been lacerated for years with no discomfort, notwithstanding the vaginal outlet had remained so open that it was a matter of surprise to find the pelvic organs in place. On the other hand, have we not been as often puzzled at the amount of suffering attending the slightest degree of injury?

And it is quite common to meet with instances where the vaginal outlet is relaxed, as the mouth of a bag would be from which the running string had been withdrawn. In these cases no apparent loss of the perineum can be detected, and yet the same train of symptoms exists as in the other conditions. It is therefore evident that the suffering and discomfort which was experienced in common could not have been the result of laceration of the perineum, since the supposed effect was not in proportion to the extent of lesion, and was even found to exist where no injury of the kind had been received.

Various modifications of Baker Brown's operation have been employed since he first united the torn tissues in front of the vaginal outlet. Yet, to this day, has any one had the good fortune to permanently relieve the discomfort attributed to a loss of the perineum by simply uniting the tissues which had been lacerated, and no more? We have all been disappointed after this operation, and could only give the necessary support by resorting to the use of a pessary for an indefinite period. Experience, I think, will bear me out in the statement that no operation, performed for the cure of the ills attributed to a want of support after a loss of the perineum, will give the needed relief unless some portion of the posterior vaginal wall be invested in the line of union. If this be not done, it will matter little how extensive a surface has been united, even to closing the canal, if this be accomplished by only bringing together the tissues at the vaginal entrance. The wished-for support can not be gained unless the denuded surfaces are properly extended within the canal, so as to be posterior to the line of the vaginal at-

tachment with the external tissues, and this will always be very much beyond the limit of any laceration confined to the perineum. I long sought an explanation of the fact that if I united the tissues, even to a limited extent, at the vaginal junction, and in a line transverse to the axis of the canal, I could often give the patient relief, notwithstanding the perineal injury remained unrepaired.

The pelvic fascia, forming the sulcus along the side of the vagina, is reflected over the muscles in an attachment around the line of junction of the vagina with the external soft parts, so that, with the sub-pubic ligament above, the connection with the coccyx behind, and the tuber ischii on each side, a firm support is given to the outlet. At the point where the vagina and urethra perforate this septum, the fascia, forming the sulci within the canal, is reflected over the muscles in front of the anterior curve of the rectum, thus directly supporting the parts in defecation and when in the upright position, so that the rectal wall can not encroach upon the vaginal canal. Notwithstanding the parts about the vaginal outlet are thus firmly supported directly from the roof of the pelvis, at the superior strait, they are elastic, and capable of great distension, within certain limits. At our last meeting I had the honor of presenting a paper calling the attention of the Society to the occurrence of a transverse laceration of the urethra which was produced sometimes in the attempt to dilate that canal. This lesion, it was shown, took place at the sigmoid portion of the urethra, where its course is downward and backward in its relation to the sub-pubic ligament. As the advancing finger, or dilator, reaches this part of the canal, which is here firmly bound down by the reflected pelvic fascia, the parts must be put on the stretch and be carried in advance on the point of the dilator. Should the tissues prove sufficiently unyielding, a transverse laceration takes place, by which the parts are freed from the support of the fascia and the canal remains patulous.

In like manner, under certain circumstances in childbirth, the soft parts of the vagina are crowded up in advance as the

head passes along the floor of the pelvis. Laceration, if it occurs, takes place not in the posterior commissure of the labia majora, but begins somewhere within the canal, and it is only as the shoulders escape that the rent is completed externally. The soft parts may be lacerated or not, but, in many instances before they are torn, I believe the fascia, extending from the sulcus on each side, becomes separated from its connection with the vaginal outlet, and this separation may take place without any external injury. We then have the condition I have compared to the mouth of a bag without the running string. So long as the proper support is exerted by the fascia and connective tissue of the pelvis, the posterior wall of the vagina will be drawn up and be kept in close contact with the anterior one, and the air will be excluded from the canal. When a patient is placed in a favorable position and the perineum is retracted, as with a Sims's speculum, this support will be lost for the time, in consequence of the fascia becoming relaxed just as the radial line from the support above becomes shortened by the backward traction. In like manner, when this fascia is separated at the vaginal junction by accident, the support is lost, the walls of the canal relax, so that the passage becomes ballooned out from atmospheric pressure, and the muscular attachment will open permanently the outlet laterally and backward with, as I have seen, the fourchette uninjured. The vaginal rectocele, which soon appears, is due not so much to the external laceration of the tissues in front as to their having been drawn aside, somewhat as we would separate a curtain, leaving the curve forward of the vagina unsupported. The prolapse of the vaginal wall is then made more apparent than real, for we rarely have other than a very limited degree of prolapse afterward, unless extensive laceration of the cervix has occurred, which accident is almost the sole cause of procidentia uteri following parturition, through the inevitable subinvolution. The discomfort realized while standing, and which is attributed to a loss of the perineum, is not due in the beginning to prolapse at any point.

The fascia and connective tissue of the pelvis support and control the circulation through the blood-vessels to a remarkable extent so long as these tissues are in a state of integrity. But when this necessary support has been lost, the vessels become dilated, to an increasing degree, as the upright position is maintained, and prolapse is in time a consequence, but only from the additional weight.

I have held for many years the opinion that when the sphincter ani had been lacerated, together with more or less of the recto-vaginal septum, and the labor had been terminated without the aid of instruments, the tear began in the rectal septum, caused, as I supposed, from crowding the tissues in advance of the head, as is often shown does take place by an inverted anus, and from a beginning in these tissues the rent extended from within outward to the perineum.

This, however, is not the rule from the use of forceps, unless the edges of the blades are made too thin, and the parts are cut by elevating the handles too rapidly in the delivery of the head. The perineum is, beyond question, frequently lacerated by instrumental delivery, but it is a matter of common observation that the tear then begins at the fourchette and extends from without inward. This result most frequently follows the questionable procedure of completing the delivery with the forceps instead of removing it on bringing the head down to a point where nature might safely terminate the labor.

During the past twenty years I have met with four cases in the Woman's Hospital, and one, I think, in private practice, where the sphincter ani and rectal septum had been lacerated so as to allow of the passage of the child by the rectum. In all of these cases the fourchette had remained unruptured, and was not divided until I did so at the reparatory operation.

During the past winter I operated in my private hospital, and with the aid of Dr. Bache Emmet, in a case where the sphincter ani had been ruptured obliquely into the connective tissue of the pelvis on the right side and backward nearly to a

line with the coccyx, leaving the perineum uninjured. The physician had died since her delivery, so that I was unable to gain any information in regard to the difficulty; but learned from the patient that the head was born first, that the child was a large one, and her delivery was effected by the efforts of nature after, as she terms it, a "frightful labor." In healing, the line had cicatrized, leaving a dense seam beyond the limit of the sphincter muscle. Fair retentive power had been gained, but the traction exerted by this scar caused a great deal of discomfort on sitting upright, and suffering from making any bearing-down effort. While under ether I thoroughly stretched and paralyzed the muscle, introduced a large Sims's speculum into the rectum, and dissected out the cicatricial mass with a pair of scissors. I then closed the wound by means of interrupted carbolized-silk sutures. Beginning within the gut, at the upper angle, and extending the line outward, the fibers of the sphincter were brought together by the interrupted sutures, as well as the skin beyond to the outer angle of the wound. The result from the operation was perfect. Some of the sutures disappeared, and the others were removed, about two weeks after the operation, by giving ether and using a small-sized Sims's speculum, which was passed into the rectum as the patient lay on the back. The success of this operation has suggested the advantage of treating fistula in ano by the same method. In this connection I will note that from the vagina I close, in the same manner with interrupted silver sutures, lacerations through the sphincter ani and recto-vaginal septum, and do so when the tear extends for any distance beyond the muscle. During the past year I have followed this plan entirely, which, however, was but a revival of an old mode of practice with me. Notwithstanding the rare character of these cases, their chief value, in connection with my subject, is to establish the fact that where extensive laceration takes place the force is exerted before the head and shoulders have advanced far enough to put the fourchette on the stretch. As this does occur, it is easy to conceive that the pelvic fascia, which has throughout to bear

the brunt, may be frequently overstretched and separated from its attachments with far less force than could have brought about the condition in the cases I have described. If this be true, the fallacy of supporting the perineum is made most obvious, and, if the procedure be carefully employed, it might readily cause the injury. It proves, also, that Dr. Goodell's suggestion and practice of relieving the pressure on the perineum by making traction backward with two fingers in the rectum is based on a correct principle.

As my object is to solicit the necessary discussion, and to have the correctness of my views judged by future observation, I will proceed, without further comment, to describe my mode of relieving the difficulty.

In the usual operation, as performed for closing a lacerated perineum, and with the view of obtaining the greater support by forming as broad a surface as possible, tissues are united which were never torn apart. It is customary to extend the denuded surface below out to, and to include sometimes even the skin, with a large part of the labium on each side; and I have frequently seen the freshened surface extended upward in front so as to be even above the mouth of the urethra. The operation thus executed will often prove a serious barrier to sexual intercourse, and, if pregnancy should occur, the so-formed perineum must be again torn before delivery. With so extended a denuded surface, the operation becomes a very bloody one, by which the loss may prove detrimental to the patient. Abscesses are liable to form, and the suffering is intense throughout until the sutures have been removed.

Withal, no permanent benefit is gained unless a certain portion of the posterior wall be included, and, if this be done, it will be unnecessary to denude anterior to the remains of the hymen, which marks the vaginal line of union with the external portion of the genital tract.

It is about twelve years since I began to dispose of a rectocele by bringing it up behind the closed perineum as a fold transverse to the axis of the vagina. Observation

soon taught that the chief support was thus gained, and a permanent result was obtained, only by including, as I have stated, some part of the posterior vaginal wall, even if a rectocele did not exist.

About three years ago I had occasion to operate on a patient suffering from the condition of so-called subinvolution of the vagina. She was thirty-five years of age, had borne two children, and since the last labor there had been an interval of a number of years, during which time she had been an invalid. The vagina was very voluminous, with an unusually relaxed outlet, yet there had been no very appreciable degree of laceration of the perineum, nor did a rectocele exist. It was a case where, from the condition of the parts, the running string seemed to have been lost, and yet there was apparently nothing to operate upon, although she felt, while in the upright position, as if she would drop in pieces. It had proved impossible to keep any pessary in position, unless a very large size was used, and this was constantly cutting in against the bony walls of the pelvis, as all the superfluous adipose tissue seemed to have been lost. No rectocele existed, and the perineum was uninjured, yet the recto-vaginal wall was so relaxed that it could be drawn forward with a tenaculum in a large fold to the vaginal outlet. I determined to unite this fold behind the perineum, bringing it up to the level of the fourchette, or former seat of the hymen. After the surfaces had been denuded and united by interrupted sutures, the line ran as a crescent across the axis of the vagina, so that each horn became lost in the sulcus on that side. To my surprise, both the canal and outlet were reduced in size by this procedure to the average condition found in married women who had never borne children. I did not recognize the fact, but there was evidently, before the operation, a rolling out of the tissues from the vaginal entrance, and, as these were turned in, the parts seemed to have been drawn up again toward the arch of the pubes. When the operation had been completed, the line of sutures was entirely within the vagina and out of sight, even when

the labia were fully separated. The parts came together, closing the passage at the remains of the hymen, leaving the mouth of the urethra fully exposed, as before rupture of the hymenial membrane had taken place; and, as in a state of nature, when the labia were separated, the surfaces from all directions sloped gradually toward the vaginal outlet, a result which no other operation on the perineum can bring about, and, at the same time, with no damage to the glands of the vulva. When the finger was passed into the vagina, it was evident that the tissues forming the perineum had been drawn up toward the pubes by traction exerted in the line of each sulcus. These sulci are formed by the fascia stretched across the pelvis on a plane even above that of the urethra. It is evident, therefore, that the perineum is rarely ever lacerated to the extent of the apparent lesion, for a very slight injury in the connective tissue will be spread out to an exaggerated degree by the traction exerted in the opposite direction. The extent of laceration of the soft parts is even more exaggerated when the support from the fascia has been lost. The tissues in the neighborhood of the perineum then drop away, as it were, from the arch of the pubes, and are drawn back toward the coccyx, leaving the vaginal entrance open as if a very extensive injury had been sustained. That the parts are thus displaced backward toward the coccyx is demonstrated by the usual position of the carunculæ, which lay in contact with the vaginal surface of the urethra when they formed a portion of the unruptured hymen.

When the perineum has been lacerated to the fibers of the sphincter ani it will be necessary to modify somewhat the operation I have already described, although the principle is essentially the same.

The patient is to be placed on the back, with the legs flexed over the abdomen, so that the labia may be well separated by an assistant. The vaginal outlet will thus be fully opened so as to expose the carunculæ on each side. If the lower portion of these be seized with a tenaculum in each hand, together with the corresponding surface on the poste-

rior wall of the vagina, and the three points be thus brought together, it will be easy to map out the surfaces which are to be united.

By the direct traction exerted along the posterior wall, from the sulcus on each side, the labial surfaces will be drawn up again and inward so as to greatly reduce the size of the entrance to the vagina. When these surfaces are thus approximated, the most casual observer could not fail to be surprised at the limited extent of tissue through which the laceration of the perineum seemed to have passed. The former depth to the tear will be drawn out, by the backward traction, to a comparatively superficial sulcus, just as the distance from a base line to the highest point of a perpendicular one would be lessened by the deviation of the latter from a right angle to an acute one. It is usual to introduce on each side a suture through the labial tissue to the center of the fold which is to be drawn up from the posterior vaginal wall, and, as a rule, not more than two or three sutures are required to secure each horn of the crescentic line. While an assistant holds with a tenaculum the posterior flap in position, these sutures are to be secured, beginning in the angles and alternating from one side to the other. When they have all been twisted, or tied, and the vaginal outlet has been drawn up to the condition existing before the first childbirth, there will still remain to be closed in front the laceration through the perineum. It is seldom that more than three sutures are required to secure this line. But, before introducing them, an assistant should make, with a tenaculum, moderate traction from the external angle, so as to bring the line thus formed by the two folds down to the level of the surrounding mucous membrane or skin. When these sutures have been secured, and the labia have been allowed to close together, it is seldom that any portion of the line of union will remain in view.

There are two points in the operation which require some exercise of judgment, and success will be the greater with increased experience. The most common mistake would be

committed by taking up too much of the posterior wall, and, if this be done, failure may result from the sutures cutting out. It is equally important to be able to judge of the number of sutures which should be placed in the angle of the crescent. The rule should be to introduce only just so many as are necessary to bring the outer angle of the fold, formed by the denuded surfaces, to the vaginal level, and the crescentic line should always be made as small as practicable to accomplish this. When I first began to perform the operation I had several instances where the patients suffered a great deal of discomfort afterward from the too great traction exerted. This difficulty was due to having denuded too wide a surface in the angles, so that a prominent fold could be felt in the vagina running off from each angle to the sides, and which became the more tense as the line healed and retracted.

I have employed the silver-wire suture, waxed and carbolized silk, and the silk-worm gut, as used for fishing, and each possesses some special advantage. For uniting the crescentic fold, the interrupted silver sutures answer the best purpose, as they can be bent down flat on the posterior wall, with the ends all radiating toward the center, and may be left for an indefinite period before removing them. The silk thread, or the silk-worm gut, should be employed for closing the perineum and the parts near the skin. The silk sutures are the easiest to secure, and, if care be taken in their preparation, as in the manner recommended by Dr. Skene, of Brooklyn, they answer exceedingly well, but should be removed in five or six days, for fear of exciting local inflammation, although they do not always do so. In some respects the silk-worm gut is superior to either of the others. As a rule, it soon becomes soft from being bathed in the secretions, but not so much so as the silk; it is, however, less likely to cut out than the latter, but more difficult to secure by means of a knot. To overcome this objection, I have for some time past used the perforated shot, as first introduced by Dr. Sims for the silver suture, and it answers exceedingly well.

The after-treatment is simple, and consists in keeping the vaginal outlet and the parts within reach smeared with any unirritating ointment. If there be swelling, or much discomfort, warm or hot water should be frequently applied, with the patient placed on a bed-pan, by gently separating the labia and letting the stream of water fall from a saturated sponge. It is unnecessary to tie the limbs together if ordinary care be used, and the urine may be passed at will without fear of doing damage to the line of union within the vagina. A skillful nurse is less necessary than where the old method is employed, and, withal, no comparison can be drawn in regard to the gain to the patient by lessening the suffering and discomfort which always attended every method as formerly used for closing a lacerated perineum.

ACTION OF HEAT ON ARTERIES.

THE action of heat as a hæmostatic has been demonstrated experimentally by Dr. Gartner of Vienna (*Allg. Wiener Med. Zeitung*, Feb. 12th, 1884), by observing the circulation in the frog's mesentery under a microscope, illuminated by the electric light. He found that when the heat-rays were cut off the contraction of the vessels, which follows shortly on the exposure of the mesentery, did not occur, and that the degree of contraction was proportionate to the intensity of the heat to which the membrane is exposed; and, provided this be not so great as to coagulate the albumen of the blood, the vessels dilate again on the withdrawal of the part from the influence of the heat rays, proving that the action is due to change in the muscular tonicity of the vessels, and not to any physical alteration in the tissues.

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